

Claims

What is claimed is:

1. A method of injecting polymer onto substrates, which comprises:
 - having a die structure with a first member being a hot plate having a cavity with a graphical design, a second member being an insulation layer, and third member being a cold plate, and collectively defines as die members;
 - engaging a substrate having an inner surface and outer surface onto an automated table adapted to receive and secure at least a back plate, and controllably moving to a desired position;
 - guiding the substrate into the desired position opposing the die members;
 - charging a supply system of the die members with polymer;
 - moving the die members to the opposing outside surface of the substrate forming an air gap;
 - applying a controlled amount of polymer to said surface of said substrate;
 - moving the die members away from the substrate and disengaging the substrate from the desired position;
 - releasing the substrate; and
 - engaging a subsequent substrate.
2. The method of claim 1, wherein said applying comprises:
 - forcing pressurized polymer in a controllable sequence onto the outside surface of the substrate having the backplate controllably moves the substrate to desired positions.
3. The method of claim 1, wherein said forming an air gap comprises:
 - moving the die members closely to the surface of the substrate;
 - creating a sufficient gap between the die member opposing the substrate and the substrate;
 - and
 - permitting hot gas to escape.
4. The method of claim 1 wherein said charging a supply system comprises:
 - providing polymer to an injection system with at least one injector adaptable to communicate to the die members; and
 - pressurizing the supply system.

5. The method of claim 1 wherein said disengaging the substrate comprises:
moving laterally the automated table away from the die members; and
depositing the substrate externally to the die members.
6. The method of claim 1, wherein said applying comprises:
forming a plurality of graphical design in subsequent injections by forcing pressurized polymer in a controllable sequence onto the outside surface of the substrate having the backplate controllably moves the substrate to desired positions.
7. The method of claim 6, wherein said applying is performed substantially simultaneously.
8. The method of claim 1 comprises:
providing a plurality of polymers; and
injecting said polymers individually.
9. The method of claim 1 wherein said charging a supply system comprises:
providing a plurality of polymers; and
mixing said polymers to form the said polymer.
10. A method of injecting polymer onto substrates, which comprises:
providing a plurality of sets of die members wherein each set having a first member being a hot plate, a second member being an insulation layer, and a third member being a cold plate;
positioning a substrate having an inner surface and outer surface onto an automated table adapted to receive and secure at least a set of back plate, and controllably moving to position;
guiding the substrate into a position opposing the face of the first members;
charging a supply system of the die members with polymer;
moving the die members closely to an outside surface of the substrate opposing the surface of the first die members to sufficiently form an air gap in-between the surfaces;
applying a controlled amount of heated polymer to a surface of said substrate;
disengaging the substrate from the die members;
transferring the substrate to the subsequent set of die members;
applying a controlled amount of heated polymer to a surface of said substrate;
engaging a subsequent substrate;
and releasing the previous susbtrate.